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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/548,315	06/22/2006	Hideshi Iki	07481.0039-00000	6120

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EXAMINER	
SINGH, PREM C	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/548,315	IKI ET AL.	
	Examiner	Art Unit	
	PREM C. SINGH	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,8 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendment to claims 1-4, 6, 8 and 9 and cancellation of claims 5 and 7 is noted.

2. New ground of rejection necessitated by amendment to the claims follows.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-4, 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al (US Patent 6,217,748) in view of Waku et al (US Patent 5,741,414).

5. With respect to claims 1 and 2, Hatanaka discloses a process for hydrotreatment of a gas oil fraction (See abstract), the process comprising;

providing as a feed oil a hydrorefined petroleum based hydrocarbon oil with a sulfur content of 10 ppm by mass (See column 9, lines 25-29) with a boiling point range of 200 to 380°C (See column 6, lines 56-62), and

subjecting said feed oil to hydrotreatment in the presence of a hydrogenation catalyst including at least one active metal selected from the group consisting of a Group VIII metal, including Rd, Pd and Pt (See column 4, lines 11-21) to obtain an ultralow sulfur gas oil fraction having a further reduced sulfur content (See claim 2, column 10, lines 54-57).

Hatanaka invention does not specifically disclose sulfur content of the finally produced ultralow sulfur gas oil fraction, however, the invention does disclose, "The

sulfur content in the diesel gas oil product can be decided arbitrarily if necessary, and a necessary desulfurization ratio can be achieved by the optimization of reactive conditions of reaction temperature, pressure, and LHSV etc." (Column 6, lines 66-67; column 7, lines 1-3). Obviously, the conditions in the hydrotreating process can be adjusted to achieve any desulfurization ratio.

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Hatanaka invention and specify the sulfur content of the finally produced ultralow sulfur gas oil fraction which is expected to be in a range as claimed because Hatanaka invention can produce an ultralow sulfur gas oil fraction with any target sulfur content.

Hatanaka invention does not specifically disclose aromatics content of the feed and the final ultralow sulfur gas oil fraction.

Waku invention discloses a hydrotreating process using feed, catalyst, and operating conditions similar to Hatanaka to produce gas oil containing low-sulfur and low aromatics content (See abstract). Waku also discloses sulfur content of about 90 ppm and aromatics content of 17 wt% after the second step of hydrotreating (See Table 2, column 7, lines 27-29).

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Hatanaka invention and specify the aromatics content along with the sulfur content of the gas oil as disclosed by Waku. It is expected that in Hatanaka's process of final hydrotreating (See Hatanaka: column 10, lines 54-57) the ultralow sulfur gas oil produced will have sulfur and aromatics content in a range as claimed because

Hatanaka is using similar feed, catalyst and operating conditions as claimed by the Applicant.

Although Waku does not specifically disclose monocyclic and bicyclic aromatics content, however, the invention does disclose the total aromatics content (SeeTable 1 and 2). Thus, it would have been obvious to one skilled in the art at the time of invention to specify the monocyclic and bicyclic aromatics content for proper characterization of the finished gas oil. Since the total aromatics content of the feed gas oil in Waku invention is in the claimed range, it is expected that the monocyclic and bicyclic aromatics content separately, will necessarily be in a range as claimed.

6. With respect to claim 3, Hatanaka discloses hydrotreatment conditions with temperature 320°C, pressure 3 MPa, LHSV = 1 h^{-1} and hydrogen to oil ration of 1000 scf/bbl (See column 9, lines 26-29).

7. With respect to claim 4, Hatanaka invention does not specifically disclose paraffin and naphthene content of feed oil and the hydrotreated oil, however, the invention does disclose using a feed with a boiling range of 200 to 380°C comprising diesel gas oil such as straight run diesel gas oil, catalytic cracking diesel gas oil and vacuum gas oil (See column 6, lines 56-62) similar to the Applicant's claim. Since a typical gas oil will inherently have paraffin, naphthene, and aromatics content in a typical range, it is expected that the paraffin and naphthene content of the feed oil and the hydrotreated oil in Hatanaka invention should necessarily be in the claimed range.

8. With respect to claim 6, Hatanaka invention discloses that the hydrogenation catalyst includes a porous support comprising alumina, titania, zirconia, boria and silica (See column 4, lines 11-21).

9. With respect to claims 8 and 9, combined inventions of Hatanaka and Waku disclose the steps and the process required to produce the claimed ultralow sulfur and low aromatic gas oil fraction with not greater than 1 ppm sulfur and not greater than 1% aromatics. The process steps are discussed under claim 1. It is expected that the ultralow sulfur and low aromatics gas oil obtained in the combined hydrotreatment process of Hatanaka and Waku meets the Applicant's claim.

Response to Arguments

10. Applicant's arguments filed 11/19/2008 have been fully considered but they are not persuasive.

11. In the arguments on page 8 (last paragraph) and page 9 (paragraph 1), the Applicant argues that the examiner provides "mere conclusory statements" and fails to articulate "reasoning with some rational underpinning" for why Hatanaka can produce an ultralow sulfur gas oil fraction with the target sulfur content.

The Applicant's argument is not persuasive because Hatanaka produces a gas oil product with sulfur content of 0.001 wt % (10 ppm) (See column 9, lines 28-29) and

discloses, "The sulfur content in the diesel gas oil product can be decided arbitrarily if necessary, and a necessary desulfurization ratio can be achieved by the optimization of reactive conditions of reaction temperature, pressure, and LHSV etc." (Column 6, lines 66-67; column 7, lines 1-3; also see column 10, lines 54-57). Obviously, one skilled in the art would optimize the operating conditions to produce any target sulfur content gas oil in the Hatanaka process.

12. In the arguments on page 9 (paragraph 2) and page 10 (paragraph 1), the Applicant argues that one skilled in the art would chose cobalt and molybdenum catalysts supported on alumina and not catalysts chosen from Ru, Rh, Ir, Pd and Pt as claimed.

The Applicant's argument is not persuasive because Hatanaka discloses using Group VIII metal, including Rd, Pd and Pt (See column 4, lines 11-21) as claimed.

13. In the arguments on page 10 (paragraph 2), the Applicant argues that Waku does not remedy the deficiencies of Hatanaka. The examiner can not point any evidence in Waku that would suggest that its disclosed process is even capable of resulting in gas oil fractions with an aromatic content and a sulfur content as low as currently claimed.

The Applicant's argument is not persuasive because Waku reference has been used only to show the aromatics content of the gas oil feed. Waku discloses that a gas oil feed with aromatics content of 35% yields, after second step, a treated gas oil of 9%

aromatics (See Table 2, column 7). Thus, in the Hatanaka process using a catalyst comprising Rd, Pd and Pt on alumina (See column 4, lines 11-21), when one skilled in the art would optimize the operating conditions (temperature, pressure and LHSV: see column 7, lines 1-3), starting with a feed gas oil (with a sulfur content of 10 ppm and aromatics content of 9%), the product gas oil will necessarily have sulfur and aromatics content in a range, including as claimed.

14. In conclusion, the claimed invention is *prima facie* obvious over Hatanaka in view of Waku.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREM C. SINGH whose telephone number is (571)272-6381. The examiner can normally be reached on 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS 020109

/Glenn A Caldarola/
Acting SPE of Art Unit 1797